

D.T.E. 02-17

Petition of The Berkshire Gas Company, pursuant to G.L. c. 164 § 69I, for approval by the Department of Telecommunications and Energy, of its Long-Range Forecast and Supply Plan for the five-year period November 1, 2002, through October 31, 2007.

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I. INTRODUCTION AND PROCEDURAL HISTORY

On March 15, 2002, pursuant to G.L. c. 164, § 69I, The Berkshire Gas Company (“Berkshire”) or (“Company”) filed with the Department of Telecommunications and Energy (“Department”) a petition for approval of its Long-Range Forecast and Supply Plan (“Plan”) for the period of November 1, 2001 through October 31, 2006.¹ The petition was docketed as D.T.E. 02-17.

Berkshire, a subsidiary of Energy East Corporation, is a regulated natural gas distribution utility headquartered in Pittsfield, Massachusetts. The Company serves approximately 34,000 customers in 20 communities in western Massachusetts. Pursuant to notice duly issued, the Department conducted a public hearing and procedural conference in Boston on May 6, 2002. The Attorney General of the Commonwealth (“Attorney General”) filed a notice of intervention as a matter of right, pursuant to G.L. c. 12, § 11E. The Department granted Intervenor status to the Division of Energy Resources (“DOER”).

An evidentiary hearing was held at the Department’s offices on August 13, 2002. Berkshire presented three witnesses in support of its Plan: Karen Zink, vice-president of the Company; William L. Barschdorf, Jr., supervisor of gas-supply planning; and Michael Marks, senior vice-president of Applied Energy Group. The evidentiary record consists of the Company’s filing, 147 information requests and responses, and three record requests and

¹ On June 5, 2002, the Company, amended the Plan to include forecast data for the one-year period November 1, 2006 through October 31, 2007. The Department will consider the Plan applicable to the five-year period November 1, 2002 through October 31, 2007.

responses. The Company also submitted a brief. Neither the Attorney General nor the DOER issued discovery, presented or cross-examined witnesses, or filed a brief.

II. ANALYSIS OF THE LONG-RANGE FORECAST

A. Standard of Review

Pursuant to G.L. c. 164, § 69I, the Department is required to ensure "a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost." In accordance with this mandate, the Department reviews the long range forecast of each gas utility to ensure that the forecast accurately projects the gas sendout requirements of the utility's market area. G.L. c. 164, § 69I. A forecast must reflect accurate and complete historical data, and reasonable statistical projection methods. G.L. c. 164, § 69I; 980 C.M.R. § 7.02 (9)(b). Such a forecast should provide a sound basis for resource planning decisions. Colonial Gas Company, D.P.U. 96-18, at 4 (1996); Bay State Gas Company, D.P.U. 93-129, at 5 (1996); Holyoke Gas and Electric Department, D.P.U. 93-191, at 2 (1996); Berkshire Gas Company, 16 DOMSC 53, at 56 (1987).

In its review of a forecast, the Department determines if a projection method is reasonable based on whether the methodology is: (a) reviewable, that is, contains enough information to allow a full understanding of the forecast methodology; (b) appropriate, that is, technically suitable to the size and nature of the particular gas company; and (c) reliable, that is, provides a measure of confidence that the gas company's assumptions, judgments, and data will forecast what is most likely to occur. D.P.U. 96-18, at 5; D.P.U. 93-129, at 5; D.P.U. 93-191, at 2; Haverhill Gas Company, 8 DOMSC 48, at 50-51 (1982). Specifically, the Department examines a gas company's: (1) planning standards, including its weather data;

(2) forecast method, including the forecast results; and (3) derivation and results of its design and normal sendout forecasts. See D.P.U. 93-129, at 5-6; see also Boston Gas Company, D.P.U. 94-109 (Phase I), at 9 (1996). As part of the review of the forecast, the Department also examines the company's scenario analysis, which is used for evaluating the flexibility of the company's planning process, including any cold-snap analysis² and sensitivity analysis. Boston Gas Company, 25 DOMSC 116, at 200 (1992) ("1992 Boston Gas Decision"); see D.P.U. 93-129, at 23-25 and D.P.U. 94-109 (Phase I), at 61-66.

B. Previous Sendout Forecast Review

The last review completed for a forecast and supply plan by the Company was described by the Department in its decision in Berkshire Gas Company, D.T.E. 98-99 (1999), in which the Company's Forecast and Supply Plan was approved with directions for future filings. In that Order, the Department noted that Berkshire had used neither econometric modeling nor a time-series analysis for its demand forecast, and directed the Company to use a more sophisticated forecasting technique in its next filing. D.T.E. 98-99, at 23-24. This Order addresses the Company's compliance with the Department's directives in Section II of that Order.

² A cold-snap is a prolonged series of days at or near design conditions. Colonial Gas Company, D.P.U. 93-13, at 66 (1995); 1992 Boston Gas Decision at 217; Commonwealth Gas, 17 DOMSC 71, at 137 (1998) ("1998 Commonwealth Gas Decision").

C. Planning Standards

1. Weather Data and Planning Standards

a. Description

The Company stated that it maintains a thirty-year historical weather database (Exh. BG-1, at 32). Berkshire continued to recognize the importance of maintaining weather data for use in the forecasting process and maintained weather data for degree-days³ (“DDs”) and effective degree-days (“EDDs”)⁴ from two sources: the Company’s weather stations located at its Pittsfield headquarters and at its Greenfield Service Center (id.). Berkshire noted that it has collected approximately thirteen years of weather data for the Greenfield Division (id.). The Company expects to consider this enhanced data in future weather analyses (id.).

Berkshire’s weather analysis utilized the results obtained from a comprehensive weather study that was conducted by Management Applications Consulting, Inc.,⁵ (“MAC”) and approved by the Department in the Company’s last Forecast and Supply Plan, D.T.E. 98-99 at 5-6 (1999) (Exh. BG-1, at 31). Although the Company considered updating its weather study for this filing, it did not do so because a new weather study would most likely have a minimum impact on the planning standard at a substantial cost (id.; Exh. BG-1, at 33; Tr. at 32-34).⁶

³ A degree-day is a measure of the coldness of the weather experienced, based on the extent to which the daily mean temperature falls below 65 degrees.

⁴ An effective degree-day takes into account wind speed in determining the coldness of the weather.

⁵ The MAC study was performed in June 1991 and used the Company’s historical degree data dating back to 1951 (Exh. D.T.E. 1-45).

⁶ The Company estimated the cost of updating the weather study at over \$20,000 (Tr. at 36-37).

Berkshire believes that employing a twenty-year rolling average for its normal year forecast takes into consideration the changing weather conditions that should be reflected in its sendout projections (Exh. BG-1, at 32). Further, Berkshire noted that the design standards recommended by the MAC study are still appropriate in its current planning process (Exh. BG-1, at 33). In maintaining the current standards, Berkshire considered several factors: 1) the Company's actual experience; 2) the comparison of the Company's standard to the planning standards of other regional gas utilities; and 3) the flexibility of its resource portfolio and the external costs associated with planning for an alternative standard (Exh. BG-1, at 34). The Company noted that it experienced a design day of 76 DD on January 19, 1994 and was able to serve the associated demand reliably due to the flexibility and responsiveness of its resource planning process (id.).⁷

Berkshire compared its own standards to those employed by similar regional utilities (Exh. BG-1, at 35).⁸ The Company noted that other regional utilities maintain design day standards with probabilities ranging from one-in-25 years to one-in-50 years (id.). Thus, the Company concluded that its probabilistic standard and its contingency planning standard were consistent with other regional utilities both in terms of actual DDs calculated and probability of occurrence (id.).

⁷ The Company noted the benefits in terms of flexibility and reliability of service from its contract with the operator of the Pittsfield Generating co-generation facility and from the construction of the Whatley LNG facility in January 2000 (Exh. BG-1, at 34-65).

⁸ Berkshire participated in a design standard survey of New England gas utilities performed by Boston Gas Company (Exh. BG-1, at 35).

Berkshire asserted that it is able to provide reliable service at more extreme conditions due to the Company's resource plan (Exh. BG-1, at 36). The Company further stated that customers are not subject to increased capacity costs in connection with Berkshire's ability to provide service since Berkshire's fixed costs of providing service are not tied to planning for a particular design (id.). Thus, customers are only subject to increased commodity-related costs (id.). As a result, Berkshire determined that it would not be prudent or cost beneficial to go to extreme lengths to analyze the costs of unserved demand (id.).

In sum, the Company stated that continued reliance on the Company's previous weather study is appropriate and cost-beneficial for planning purposes (Exh. D.T.E. 1-46). The Company represented that it will consider conducting a new weather study, using EDD as input weather data, and revising its planning standards in connection with the Company's next forecast filing (Exh. D.T.E. 1-44).⁹

b. Analysis and Findings

Berkshire has not updated its weather study for this filing. However, the Department notes that, Berkshire employed a twenty-year rolling average for the normal year forecast taking into consideration the changing weather conditions. Further, the Department notes that Berkshire's current planning standards are comparable to those of other similar regional utilities. In addition, the Department acknowledges the flexibility of the Company's portfolio and its ability to meet customer's needs at recent extreme weather (Exh. BG-1, at 34). Therefore, the Department finds the results obtained from the weather analysis to be

⁹ The Company stated that it has collected approximately eight years' worth of EDD historical data, so far (Tr. at 31).

appropriate, reviewable and reliable. The Department notes that Berkshire is the only LDC in the Commonwealth utilizing heating degree days¹⁰ (“HDD”) instead of EDD as input weather data and therefore, the Department directs the Company to perform a study for the Company’s next forecast and supply filing on the merits of utilizing HDD versus EDD.

2. Normal Year Standard

a. Description

Berkshire stated that it developed its normal year standard¹¹ using 20 years of weather data (Exh. BG-1, at 33). The Company indicated that it updates this standard annually by using the most recent 20-year average of the weather data and then calculates an arithmetic average for a normal year (*id.*). Based on this method, the Company calculated its normal year standard of 7,057 DD (*id.*).

b. Analysis and Findings

The Department has previously accepted the use of the arithmetic average of historical degree day data to establish a normal year standard. See North Attleboro Gas Company, D.T.E. 01-47, at 7 (2001); Fall River Gas Company, D.T.E. 99-26, at 5-6 (2000); Colonial Gas Company, D.P.U. 96-18, at 9 (1996). Because Berkshire bases its normal year standard on an historical average of the up-to-date weather data base and its planning standards on this data base, the Department finds that Berkshire’s method for determining its normal year standard is reviewable, appropriate, and reliable.

3. Design Year Standard

¹⁰ A heating degree day indicates how far the average temperature fell below 65°F.

¹¹ A normal year is a typical year for which a company plans.

a. Description

The Company established a design year¹² of 8,194 DD using a one-in-30 year probability (Exh. BG-1, at 38). Berkshire stated that its planning standard for a design year is consistent with other regional utilities (id.).

Berkshire stated that its design year remains appropriate given the flexibility of its resource plan, particularly in terms of peaking resources (Exh. BG-1, at 38). The Company asserted that including additional costs would not lead to greater reliability, and meaningful cost savings would not be achieved by planning for an extremely low level of DD, i.e. a one-in-20 year standard or less (id.).

The Company determined that a one-in-30 year design winter¹³ of 6,070 DD is appropriate (Exh. BG-1, at 39). The Company noted that the statistical analyses between a one-in-20 year standard and a one-in-30 year standard were essentially equivalent (id.).

b. Analysis and Findings

In its Gas Generic Order, 14 DOMSC 95, at 97 (1986), the Siting Council notified gas companies that renewed emphasis would be placed on design criteria “to ensure that those criteria bear a reasonable relationship to design conditions that are likely to be encountered.” The Siting Council required each company, in each forecast filing, to include a detailed discussion of the basis upon which it selected the design weather criteria, with particular attention to the frequency with which design conditions are expected to occur, and to the effect

¹² A design year is the coldest year for which a company plans.

¹³ A design winter is the coldest winter for which a company plans.

of the design standard on the reliability of the company's forecast and the cost of its supply plan. Gas Generic Order, 14 DOMSC 95, at 96-97, 104-105 (1986).

Berkshire did not perform an analysis of the costs associated with "unserved demand" related to a cost-benefit analysis because Berkshire concluded that the cost of such an analysis could not be justified (Exh. BG-1, at 38). The Company maintains that Berkshire's resource plan enables it to meet different levels of demand subject only to additional cost associated with incremental commodity requirements (id. at 36).

The Company has developed its design year and design winter standards based on a one-in-30 year probability. The Department finds that Berkshire has complied with Department precedent in terms of the use of probabilistic analysis. The Department also finds that the Company's probabilistic standards are consistent with those of similar local distribution companies ("LDCs") in Massachusetts. Therefore, the Department finds Berkshire's method for determining its design year and winter standards is reviewable, and reliable. However, the lack of a cost-benefit analysis makes the design year standard inappropriate, thus the Company is directed to present such a study as part of its next forecast and supply filing.

4. Design Day Standard

a. Description

Berkshire stated that it continues to rely on its approved analysis of weather data (Exh. BG-1, at 34).¹⁴ Berkshire maintained a design day standard at 75 DD with a probability of occurrence of once in twenty years (id.).¹⁵ Further, the Company stated that it employs a 75 DD as a minimum, and a 76 DD is used for possible contingency analysis (id.). Berkshire stated that its design day remains appropriate given the flexibility of its resource plan, particularly in terms of peaking resources (id.).

In the event of an extreme peak day or supply shortfall, Berkshire would look for additional resources from its affiliate companies and other regional LDCs and, if necessary, from its alliance partner as well as from the New England Gas Association's Supply Task Force (Exh. BG-1, at 37).¹⁶ Berkshire indicated that these affiliate relationships already proved beneficial when Berkshire was able to obtain LNG from an alternative source after Distrigas of Massachusetts Corporation ("DOMAC") declared a force majeure as a result of the terrorist attacks in September 2001 (id.). In the event that no peaking or displacement gas is available from these sources, the Company stated that it would seek voluntary service curtailments, followed by service interruption to firm commercial and industrial customers (id.). The Company indicated that, in the unlikely event the shortfall became large, it might be necessary to interrupt residential customers (id.). Berkshire next indicated that even under extreme

¹⁴ See Berkshire Gas Company, D.T.E. 98-99 (1999), at 11-13.

¹⁵ A design day is the coldest day for which a company plans.

¹⁶ The Company specifically mentioned the Connecticut Natural Gas Corporation ("CNG") and Southern Connecticut Gas Company ("SCG") in Connecticut as affiliate companies, and BP Energy as its alliance partner (Exh. BG-1, at 37) .

weather conditions, the Company would be able to maintain service to the Pittsfield and North Adams Divisions (id.).

b. Analysis and Findings

Berkshire's method for developing a design day standard is similar to the Company's development of a design year standard. The Department notes that Berkshire has neither performed a comprehensive analysis of the cost of unserved demand nor has it quantified the actual effects associated with planning to different standards. The Company has maintained its design day standard of 75 DD, which corresponds to a one-in-20 year probability with a 76 DD being applied for possible contingency analysis.

As discussed in Section II.C.3.b, above, the Department finds that Berkshire has complied with Department precedent in terms of the use of probabilistic analysis. Therefore, the Department finds that Berkshire's methodology for determining its design day standard is reviewable, and reliable, but not appropriate given the lack of a cost-benefit analysis. The Department directs the Company to provide in its next forecast and supply plan, a cost-benefit analysis to support the Company's selection of a design day standard.

5. Cold-snap Planning Standard

a. Description

The Company maintained the cold-snap planning standard ¹⁷ of 620 DD using one-in-30 probability (Exh. BG-1, at 39).¹⁸ The Company developed a database showing a rolling 10-day average DD and thus, developed the maximum number of DDs occurring in any ten-day period (id.). Berkshire stated that the cold-snap standard is appropriate given the recent January 2000 cold-snap of 575 DD, which was the seventh coldest ten-day period in the last fifty years in the Company's service territory (id.). The Company stated that no significant cost or reliability benefits can be secured through the application of an alternative standard given the Company's flexible resource plan (id.).

b. Analysis and Findings

The Department notes that Berkshire developed its cold-snap using 30 years' worth of weather data that are reliable and representative of weather conditions in the Company's service territory. The Department further notes that Berkshire developed its cold-snap planning standard using a definition of a cold-snap as ten consecutive days of protracted very cold weather. The Department notes that this definition is comparable to the definitions approved by the Department in recent cases. The Department also finds that Berkshire used appropriate statistical methods to develop its cold-snap planning standard. The Department therefore, finds Berkshire's analysis to determine its cold-snap planning standard to be reviewable, appropriate, and reliable.

¹⁷ A cold-snap is a prolonged series of days at peak or near peak weather conditions for which a company plans.

¹⁸ The Company stated that the one-in-20 year standard was essentially identical, i.e. 613 DD (id.).

6. Conclusions on Planning Standards

The Department has found that the Company provided a reliable weather data base for use in the development of its planning standards. Further, the Department has found that Berkshire used the arithmetic average of historical degree day data to establish a normal year standard, a method which has been accepted previously by the Department. The Department has also found that the Company employed a reasonable statistical analysis of the recurrence probabilities of its normal year, design year, design winter, design day and design cold-snap standards. Accordingly, the Department finds that Berkshire's overall planning standards are reviewable, appropriate and reliable.

The Department notes that the Company's design planning standards have not changed since the Company's last approved forecast and supply plan. See, Berkshire Gas Company, 98-99 (1999). However, the Department directs Berkshire to present a cost-benefit analysis in its next forecast and supply plan filing. The Department, notes that Berkshire is the only LDC in the Commonwealth utilizing HDD instead of EDD as input weather data and therefore, the Department directs the Company to perform a study on the benefits of utilizing HDD versus EDD for the Company's next forecast and supply filing.

D. Forecasting Methods

1. Berkshire's Forecasting Model

The Company stated that it retained the services of Applied Energy Group, Inc. ("AEG") in order to use a theoretically well-founded forecasting technique, and to comply with

the directives in D.T.E. 98-99 (1999) (Exh. BG-2, at 3-4).¹⁹ The Company stated that the forecasting methodology relies upon exogenous variables such as weather, customer levels, pricing and availability of alternate fuels, personal income and employment, retail sales, gross domestic product, as well as the demand for, and pricing of, natural gas (Exh. BG-1, at 12). Berkshire states that all variables used in the demand forecast are representative of the market forces in the Company's service territory (Exh. D.T.E. 1-6).

The Company used an econometric forecasting model that employs multiple regression techniques to estimate equations and predict the number of customers and use per customer, or sales, for each of the Company's customer classes (Exh. BG-2, at 3-4). Berkshire stated that the models were developed by class for firm sales and total throughput (Exh. BG-2, at 4).²⁰ The models also utilize a forecast of firm sales loads that are projected to migrate from sales to transportation service (Exh. BG-1, at 13). Further, the Company noted that its forecasting model inherently captures the load reductions resulting from the implementation of DSM programs (id.).

¹⁹ In Berkshire's last forecast and supply plan, the Company relied on the use of historical averages for its sales (demand) forecast. Since the Company used neither econometric modeling nor a time series analysis for its sales (demand) forecast, the Department deemed the figures in that analysis reliable, but not appropriate. Thus, the Department directed Berkshire in its next filing to use a more sophisticated and theoretically well-founded forecasting technique, which would be technically suitable to the size and nature of the Company (D.T.E. 98-99, at 23-24).

²⁰ The firm sales forecasts are exclusively for firm sales customers, while the firm throughput forecasts include both firms sales and firm transportation customers (Exh. BG-1, at 12).

2. Econometric Forecasting

a. Description

The Company used eight years of historical monthly sales data (1993/94-2000/2001) for each customer class and stated that these historical data sets provide a credible history upon which to forecast future trends in gas sales (Exh. BG-2, at 5). Further, the Company stated that monthly data provided a robust estimation of seasonal factors such as weather (id.). Variations in billing cycles were captured through monthly DD variables that were tailored specifically for each rate class billing cycle (id.).

Regarding Berkshire's modeling strategy, the Company stated that regression analysis was its first choice, and that other techniques were also employed to produce superior statistical measures of accuracy (Exh. BG-2, at 9). The Company stated that it evaluates different models based on a combination of some or all of the following criteria: 1) analysis of residuals and traditional "goodness of fit" measures; 2) analysis of the reasonableness of the forecast generated by the models and; 3) analysis of the reasonableness and sign of the coefficient for each of the explanatory variables (Exh. BG-2, at 11).²¹

The results of Berkshire's demand forecast show that the total annual Company firm throughput is expected to increase by 1.5 percent annually (Exh. BG-1, at 13). Further, the Company projected an annual growth rate of approximately 0.6 percent in the number of firm customers, from 34,022 in 2002 to 34,968 in 2006 (id. at 14).

²¹ The Company explained that the residual analysis and the traditional "goodness of fit" measures are used to determine how well models fit the historical data and whether there were any statistical problems such as autocorrelation (Exh. BG-2, at 11).

The Company stated that its marketing and DSM programs have had an effect on the commercial and industrial (“C&I”) forecast (Exh. BG-1, at 16). Berkshire stated that it attempts to convert both residential and C&I customers to heating load (id.).²² This increase in heating load has had the effect of stabilizing or increasing use per customer in the low load, or heating, classes (id.). At the same time, the Company noted that because it has had conservation programs for its C&I customers since the early 1990's, much of the market has been saturated (id.). Thus, the conservation levels reflected in the forecast are only based on the historical data that already reflect load reductions due to conservation (id.).

b. Analysis and Findings

In Berkshire’s last forecast and supply plan, the Department directed the Company, in its next filing, to use a more sophisticated and theoretically well-founded forecasting technique, which would be technically suitable to its size and nature. Berkshire Gas Company, D.T.E. 98-99, at 23-24 (1999). The Department finds that Berkshire: (1) used a theoretically well-founded forecasting technique using demographic and economic variables that were specific to the Company’s service territory, and; (2) analyzed the predictive ability of its forecast models. Therefore, the Department finds that the forecasting model developed by Berkshire is reviewable, reliable, and appropriate for forecasting the normal year and design year sendout for the Company’s residential and C&I rate classes.

²² The Company’s primary marketing programs include: 1) incentives to existing non-heating customers that add natural gas heating to their home or business; 2) promoting the usage of natural gas at least-cost by renting water heaters and conversion burners, and; 3) other cost-effective marketing plans designed to add loads that generate the highest margins and require the least amount of capital spending (Exh. BG-1, at 8-9).

3. Transportation Forecast

a. Description

The Company indicated that the total forecasted transportation volumes will increase from 1,625 MMcf in the split year 2001-2002 to 1,828 MMcf in the split year 2005-2006 (Exh. BG-2, at 52). The Company indicated that because of the relatively short history of transportation service, the use of econometric techniques to forecast transportation usage can be problematic (id.). As a result, the Company stated that the transportation forecasts were derived by deducting the firm sales forecast from the throughput forecast for each rate class (id.).²³ The six C&I rate class transportation forecasts were summed to arrive at a total transportation forecast (id.).

Berkshire indicated that after an increase in the number of firm sales customers migrating to firm transportation observed through February 2002, the Company expects the number of transportation customers to remain constant over the forecast period (Exh. BG-2, at 20-24, 27, 30-33). The Company stated that due to the unprecedented rise in natural gas prices during the winter 2000-2001, the Company experienced a surge in firm sales to firm transportation conversions beginning in the spring of 2001 (Exh. BG-1, at 26). Firm sales customers that were subject to the drastic increases associated with the Company's CGA sought to insulate themselves from extreme price spikes by locking in commodity prices with marketers (id.). The Company indicated that after the recent change in its methodology of computing its

²³ In the case of the both residential heating and non-heating classes of service, as well as company use, there is no difference between sales and throughput (Exh. BG-2, at 40).

CGA factor,²⁴ gas prices will be on parity between the suppliers and the Company expects migration to stabilize (Exh. D.T.E. 1-24).

Berkshire began offering firm transportation service in November 1996 to customers served on the 42, 43, 52 and 53 rates (Exh. BG-1, at 25). Customers taking firm transportation service prior February 1, 1999 received no capacity assignment from the Company (id.). Customers that switched to transportation service as of February 2, 1999 were subject to a one-cent per Ccf “Interim Transportation Charge” in addition to their delivery rate (id.). After November 1, 2000, Berkshire’s customers switching to firm transportation service from firm sales service are subject to the Company’s mandatory-capacity assignment program (id.).²⁵

The Company stated that the number of firm transportation customers increased from approximately 160 in May 2001 to approximately 625 by November 2001 (Exh. BG-1, at 27). Further, Berkshire indicated that because these former firm sales customers were subject to the Company’s mandatory capacity assignment program, Berkshire assigned its first blocks of mandatory capacity to suppliers in June 2001 (id.). The Company has assigned 13 blocks of capacity to three suppliers as of November 2001. The total amount of capacity assigned to suppliers as of the same date is 3,000 Dth (id.).

The Company forecasted that all new-to-the-system medium and large C&I customers will continue to elect transportation service since, typically, these customers are well informed

²⁴ See Berkshire Gas Company, D.T.E. 01-56 (2002).

²⁵ However, the Company noted that any new-to-the-system customers that had not previously been served as a firm sales customer are exempt from the Company’s mandatory-capacity assignment program (Exh. BG-1, at 25).

and have loads that are desirable to suppliers (id.). At the same time, Berkshire predicted that new-to-the-system small C&I customers, as well as all residential customers, will initially take default service and may, over time, convert to transportation service (Exh. BG-1, at 28).

Berkshire stated that because the Company has already experienced an initial surge of conversions from default service to transportation service as a result of full customer choice in November 2000, Berkshire forecasts that one net block of capacity will be assigned to suppliers over the forecast period (id.).

The Company further noted that it has recently experienced a significant number of inquiries from transportation customers who are subject to mandatory capacity assignment as to their ability to return to default service (id.). Berkshire concluded that with the current mandatory capacity assignment regime, customers switching to or from default sales service do not pose any significant concerns for the Company in terms of resource portfolio issues (Exh. BG -1, at 29-30).

b. Analysis and Findings

In Berkshire's most recently approved forecast and supply plan, the Department directed Berkshire in its next filing to provide a forecast of customers migrating from sales service to transportation service. See Berkshire Gas Company, D.T.E. 98-99, at 21-22 (1999).

Berkshire indicated that it expects the number of firm transportation customers to remain stable throughout the forecast period, after the increase since April 2001. Based on the information available to the Company at the time Berkshire prepared its current filing, the Department finds that Berkshire's method for determining its transportation volumes and number of firms customers is reviewable, reliable and appropriate.

4. Normal and Design Year Sendout Forecast

a. Description

The design year is used to project sales, by class, assuming extreme winter conditions (Exh. BG-2. At 53). Berkshire stated that the normal year average was compared to the design year and monthly adjustment factors for heating degree days were developed (id.). Berkshire explained that these factors were based upon the ratio of design and normal years from the Company's weather data (id.). Then, the Company applied the adjustment factors to the billing cycle adjusted normal year for each rate class, and developed a billing cycle adjusted design year series for each rate class, which can be used to forecast sales under design year conditions (id.).

Berkshire indicated that its normal year sendout for the heating season will increase from 4,518 MMcf for the 2001-2002 split year to 4,704 MMcf for the 2005-2006 split year (Exh. BG-1 at Tab G5). Berkshire further stated that its design year sendout for the heating season will increase from 5,057 MMcf in the 2001-2002 split year to 5,272 MMcf in the 2005-2006 split year (id.). Finally, Berkshire indicated that its design year sendout for the non-heating season will increase from 2,365 MMcf in the 2001-2002 split year to 2,581 MMcf in the 2005-2006 split year (id.).

b. Analysis and Findings

Berkshire appropriately incorporated the HDD normal year and HDD design year data into the forecasting model to obtain its sendout forecast. Berkshire also prepared separate forecasts for heating and non-heating sales for the planning period both for normal and design conditions as developed in Section II.C. Consistent with Section II.D.2.b., the Department

finds that the normal and design year sendout forecasts are reviewable, reliable, and appropriate.

5. Design Day Sendout Forecast

a. Description

The Company stated that a design day forecast was developed by first performing a regression analysis of daily system sendout and heating degree days (Exh. BG-2, at 57). Berkshire stated that March and December were also tested to account for differences in sensitivity of weather based upon the time of the year (id.). Then, individual regression models were developed for the four most recent split years (id.). Next, Berkshire solved each regression model for the five coldest days in each year and computed the average error for these five years (id.). Finally, the Company solved a regression for the design day degree-days of 75 and adjusted the result by the average error previously obtained (Exh. BG-2, at 57). Berkshire indicated that its design day sendout increases from 53,502 MMcf for the 2001-2002 split year to 55,848 MMcf for the 2005-2006 split year (id.).

b. Analysis and Findings

The Company projected an increase in the design year sendout from 53,502 MMcf for the 2001-2002 split year to 55,848 MMcf for the 2005-2006 split year. The Department notes that the Company used the most recent data to model its daily sendout models as well as an appropriate statistical technique. The Department finds that the Company's design day sendout forecast is reviewable, and reliable. However, consistent with Section II.C.3.b., the Department finds that the lack of a cost-benefit analysis makes the design day sendout forecast

inappropriate, and directs Berkshire to present a cost-benefit analysis in its next forecast and supply filing.

6. Cold-snap Sendout Forecast

a. Description

The Company stated that it looked for the ten consecutive days for the past 40 years with the closest HDD to the cold-snap selected by the Company (Exh. BG-2, at 58).²⁶ Then, Berkshire stated that it adjusted the HDD to equal 620 HDD (id.). The Company, then solved each of the ten days using the system degree day/sendout regression model that was developed for one of the split year and computed the cold-snap sendout (id.).²⁷ Berkshire indicated that its cold-snap sendout increases from 466,603 MMcf for the 2001-2002 split year to 487,063 MMcf for the 2005-2006 split year (Exh. BG-2, at 59).

b. Analysis and Findings

Berkshire's methodology for developing a cold-snap sendout is similar to the Company's development of design day sendout. Therefore, the Department finds that the Company's cold-snap sendout forecast is reviewable, and reliable, and appropriate.

E. Conclusions on the Sendout Forecast

In its current filing, Berkshire used a theoretically well-founded forecasting technique suitable to the size and nature of the Company to project number of customers, and use per

²⁶ The Company stated that the closest fit was February 1979, which had 631 HDD during a 10-day period.

²⁷ The Company noted that it selected the daily sendout regression model for the split year 1999/2000 since it was a recent winter and since the Company experienced the seventh coldest ten-day period (575) in the last 50 years in that year.

customer or sales by customer class over the forecast period. Consequently, Berkshire has complied with the Department directives in Berkshire Gas Company, D.T.E. 98-99 (1999).

The Department notes that Berkshire utilized variables specific to the Company's service territory and that the Company analyzed the predictive ability of its forecast model. For these reasons, the Department finds Berkshire's forecast of total sendout to be reviewable, reliable, and appropriate.

III. ANALYSIS OF THE SUPPLY PLAN

A. Standard of Review

The Department is required to ensure "a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost."

G.L. c. 164, § 69I. In fulfilling this mandate, the Department reviews a gas company's supply planning process and the two major aspects of every utility's supply plan -- adequacy and cost.²⁸ Commonwealth Gas Company, D.P.U. 92-159, at 53 (1995); Colonial Gas Company, D.P.U. 93-13, at 49-50 (1995); 1992 Boston Gas Decision, at 201.

The Department reviews a gas company's five-year supply plan to determine whether the plan is adequate to meet projected normal-year, design-year, design-day, and cold-snap firm sendout requirements. The Department's review of reliability, another necessary element of a gas company's supply plan, is included in the Department's consideration of adequacy. See Fall River Gas, D.T.E. 99-26, at 18 (2000); Colonial Gas Company, D.P.U. 93-13, at 50, n.22;

²⁸ G.L. c. 164, § 69I also directs the Department to balance cost considerations with environmental impacts in ensuring that the Commonwealth has a necessary supply of energy. Colonial Gas Company, D.P.U. 96-18, at 31; Commonwealth Gas Company, D.P.U. 92-159, at 53; Colonial Gas Company, D.P.U. 93-13 at 50.

1992 Boston Gas Decision, 25 DOMSC at 201, n.87. In order to establish adequacy, a gas company must demonstrate that it has an identified set of resources that meet its projected sendout under a reasonable range of contingencies. If a company cannot establish that it has an identified set of resources which meet sendout requirements under a reasonable set of contingencies, the company must then demonstrate that it has an action plan which meets projected sendout in the event that the identified resources will not be available when expected. D.P.U. 96-18, at 31; D.P.U. 92-159, at 54; D.P.U. 93-13, at 50.

In its review of a gas company's supply plan, the Department reviews a company's overall supply planning process. An appropriate supply planning process is essential to the development of an adequate, low-cost, and low environmental impact resource plan. Pursuant to this standard, a gas company must establish that its supply planning process enables it to (1) identify and evaluate a full range of supply options, and (2) compare all options -- including Conservation and Load Management ("C&LM") -- on an equal footing. Colonial Gas Company, D.P.U. 96-18, at 31; Commonwealth Gas Company, D.P.U. 92-159, at 54; Colonial Gas Company, D.P.U. 93-13, at 51; 1992 Boston Gas Decision at 202.

Finally, the Department reviews whether a gas company's five-year supply plan minimizes cost. A least-cost supply plan is one that minimizes costs subject to trade-offs with adequacy and environmental impact. Commonwealth Gas Company, D.P.U. 92-159, at 55; Colonial Gas Company, D.P.U. 93-13, at 51-52; 1992 Boston Gas Decision at 203. Here, a gas company must establish that application of its supply planning process has resulted in the addition of resource options that contribute to a least-cost plan.

B. Base Case Supply Plan

In this section, the Department reviews the Company's supply plan and identifies elements which represent potential contingencies affecting the adequacy of supply or which potentially affect the cost of the supply plan. The Department reviews the adequacy of the Company's supply plan, the Company's supply planning process, and the cost of the Company's supply plan.

1. Supply-Side Resources

The Company stated that its portfolio of firm pipeline-transported gas supply at the time of its filing consists principally of three purchase contracts for domestically-produced gas and one purchase contract for Canadian-produced gas (Exh. BG-1, at 77-78; Exh. DTE 1-76). The Company indicated that these domestic contracts provide for up to 10,553 MMBtus per day of firm supply (Exh. BG-1, at 77). The Company's Canadian supply contract provides up to 1,057 MMBtus per day (Exh. BG-1, at 78).

Berkshire stated that its interstate pipeline capacity available to meet system requirements and utilized to fill underground storage fields can be logically separated into three segments (Exh. BG-1, at 71). First, the Company maintains "long-haul" capacity of 14,751 MMBtus per day from the gas producing regions (*id.*). The second component is the "short haul" capacity used to transport gas from underground storage fields in Pennsylvania, New York and West Virginia. The Company has 15,854 MMBtus per day of such capacity (*id.*). The third component is the 1,057 MMBtus per day of capacity used to deliver Canadian gas (*id.*).

The Company stated that it also maintains two separate contracts for storage services (Exh. BG-1, at 75-76). These contracts are with Tennessee Gas Pipeline Company ("TGP" or

"Tennessee") and Dominion Transmission Incorporated (id.). The maximum daily withdrawal quantity for these resources is approximately 15,857 MMBtus per day (id.).

The Company also maintains certain firm and interruptible transportation rights pursuant to a contract with Pittsfield Generating (formerly Altresco) (Exh. BG-1, at 79). The Company may purchase up to 7,500 MMBtus per day of the plant's gas supply during the heating season (id.). The Company stated that it may purchase up to 24,000 MMBtus of the plant's firm gas supply as a "surge protection service" in the event that the Company's supplies are prorated or curtailed (Exh. BG-1, at 80). There are no demand charges associated with this resource (id.).

The Company also stated that, during the heating season, its supply and storage volumes are supplemented by LNG vaporized from the new Whately LNG facility and propane dispatched from several propane facilities within the Company's service territory (Exh. BG-1, at 80-81; Tr. at 35-36). The Company's use of propane is limited by on-site storage capacity, trucking restrictions and the necessary "flow by" of natural gas (Exh. BG-1, at 81).

The Company maintains a contract with DOMAC for the delivery of up to 2,000 MMBtus per day of LNG (Exh. BG-1, at 79). The LNG can be taken as liquid to vaporize at the Company's LNG facility in Whately, to maintain system pressures, or as displacement gas from the interstate pipeline delivered to the Company's city gate (Exh. BG-1, at 79). The Company noted that such peak service rights have secured substantial cost savings for the benefit of the Company's customers (Exh. BG-1, at 82).

The Company maintains rates for firm transportation pursuant to the Company's recent establishment of unbundled rates. Berkshire Gas Company, D.T.E. 01-56 (2002). The Company noted that, pursuant to D.T.E. 98-32, a number of customers had migrated to

transportation and that, more recently, there has been a significant number of reverse migrations (Exh. BG-1, at 28-29; Exh. DTE 1-92).

2. Demand Side Management and Market Transformation

Berkshire stated that its residential demand side management and market transformation (“DSM/MT”) program is coordinated with local Community Action Program (“CAP”) agencies and includes a substantial low income component (Tr. at 15). The Company noted that thirty-two percent of the Company’s residential audits were for low income customers and thirty-seven percent of the residential budget was applied to low income customers (RR-D.T.E.-1). Berkshire stated that the application of its DSM programs enables the Company to defer major capital investments that would have otherwise been required to ensure reliable service (Exh. BG-1, at 10). The Company explained that, as a result of its DSM programs from the period October 1992 through April 2002, the company has provided 10,189 customer audits. The Company has installed measures for 4,882 residential customers and 967 C&I customers (RR-D.T.E.-1). The Company also explained that it is slowly decreasing its traditional programs and is making the transition towards Market Transformation programs (Tr. at 47-48, Exh. DTE 1-90).

The Company also stated that it has maintained a Load Management Rate, which is available to all non-residential customers with alternate fuel capabilities (Exh. BG-1, at 82). Berkshire explained that the Company may interrupt service to customers served pursuant to the Load Management Rate up to 15 days during peak periods (id.).

C. Adequacy of the Supply Plan

In reviewing the adequacy of a gas company's five-year supply plan, the Department first examines whether the company's base-case resource plan is adequate to meet its projected normal year, design year, design day, and cold-snap firm sendout requirements and, if so, whether the company's plan is adequate to meet its sendout requirements if certain supplies become unavailable. D.P.U. 93-13, at 62; 1992 Boston Gas Decision at 212-213; 1987 Berkshire Decision at 76. If the supply plan is not adequate under the base-case resource plan or not adequate under the contingency of existing or new supplies becoming available, then the company must establish that it has an action plan that will ensure that supplies will be obtained to meet its projected firm sendout requirements. D.P.U. 93-13, at 62; 1992 Boston Gas Decision at 212-213; 1987 Berkshire Decision at 76.

1. Normal and Design Year Adequacy

a. Description

In normal and design year planning, a gas company must have adequate supplies to meet several types of requirements. Commonwealth Gas Company, D.P.U. 92-159, at 69. Berkshire presented supply plans for meeting its forecasted normal year sendout requirements throughout the forecast period (Exh. BG-1, tables G-22NH and G-22N; Exh. DTE 1-147). The Company explained that its supply resource portfolio is adequate to meet the normal demand requirements in the forecast period. The company assumed that a minimal amount of customer migration will continue to occur during the forecast period (Exh. BG-1, at 65). The Company explained that this continuing migration is shown in the tables through the slight reduction in assets previously held by the Company that are now assigned to marketers (id.).

The Company also explained that its new LNG facility in Whately has enabled Berkshire to address the reliability concern that was identified in its previous Forecast and Supply Plan filing, such that the Company is now able to maintain the integrity and reliability of its distribution system in the Greenfield Division (id.). Berkshire forecasts that normal year firm sendout requirements will increase from 3,177 MMcf in the 2001-2002 heating season to 3,261 MMcf in the 2005-2006 heating season (Exh. BG-1, table G-22NH).

Berkshire presented supply plans for meeting its forecasted normal year sendout requirements throughout the forecast period (Exhs. BG-1, at Tables G-22DH and G-22D; Exh. DTE 1-147). Berkshire explained that it plans to meet its normal year and design year heating season needs through existing pipeline supplies and the additional peaking resources from Pittsfield Generating, DOMAC LNG vapor, liquified petroleum gas (“LP”) vaporization and load management (Exh. BG-1, at 65, 71). Berkshire forecasts that design year firm sendout requirements will increase from 3,567 MMcf in the 2001-2002 heating season to 3,666 MMcf in the 2005-2006 heating season (Exh. BG-1, at Table G-22DH).

Berkshire stated that the ability to meet such requirements is due to the flexibility of the Company's resource plan. Berkshire stated that the peaking resources are retained, in some instances, at no cost to the customer unless used, thus providing a further benefit to the customer (Exh. BG-1, at 83, Exh. DTE 1-116).

b. Analysis and Findings

As noted previously, the Department has found Berkshire's normal year forecast to be reviewable, reliable, and appropriate. The Department also found the Company's design year to be reviewable, appropriate, and reliable. Based on Berkshire's sendout and supply tables, the

Company has demonstrated that it has adequate supplies through various sources to meet its forecast sendout requirements under normal and design year throughout the forecast period. Accordingly, the Department finds that Berkshire has established that the Company has adequate supplies to meet its normal year and design year forecast sendout requirements throughout the forecast period.

2. Design Day Adequacy

a. Description

Berkshire must have an adequate supply capability to meet its firm customers' normal and design day requirements. While the total supply capability necessary for meeting normal and design year requirements is a function of the aggregate volumes of gas available over some contract period, design day supply capability is determined by the maximum daily deliveries of pipeline gas, the maximum rate at which supplemental fuels can be dispatched, and the quantity of reliable LNG available on a design day.

The Company explained that it has adequate capacity to serve the design day requirements throughout the forecast period (Tr at 34-36). Berkshire plans to meet its design day needs through existing firm pipeline supplies, underground storage, LNG, the Company's peaking service rights with the Pittsfield Generating plant and propane air injections (Exh. BG-1, Table G-23; Tr. at 35). Berkshire forecasts that design day firm sendout requirements will increase from 44 MMcf in the 2001-2002 heating season, to 56 MMcf in the 2005-2006 heating season (Exh. BG-1, at Table G-23).

b. Analysis and Findings

As noted previously, the Department found the Company's design day forecast to be reviewable, appropriate, and reliable. Based on this subsidiary finding and Berkshire's sendout and supply tables containing design day data, the Company has demonstrated that it has adequate supplies and facilities to meet forecasted sendout requirements under design day conditions throughout the forecasted period. Accordingly the Department finds that Berkshire has established that its design day supply plan is adequate to meet the Company's forecasted sendout requirements throughout the forecast period.

3. Cold-snap Adequacy

a. Description

A cold-snap is a prolonged series of days at or near design conditions. D.P.U. 93-13, at 66; 1992 Boston Gas Decision at 217; Commonwealth Gas, 17 DOMSC 71, at 137 (1998). A gas company must demonstrate that the aggregate resources available to it are adequate to meet this near maximum level of sendout over a sustained period of time, and that it has and can sustain the ability to deliver such resources to its customers. D.P.U. 93-13, at 66; 1992 Boston Gas Decision at 217; 1998 Commonwealth Gas Decision, at 137.

The Company stated that it adopted a cold-snap of 620 DDs over a ten-day period (Exh. BG-1, at 66). The Company explained that it evaluated a rolling ten-day average of DDs from its synthesized weather data (Exh. BG-1, at 39). For each month and year, averages and standard derivations for each ten-day period were calculated (id.). The Company noted that a one-in-30 year standard for a cold-snap would be 620 DDs. The Company also determined that a one-in-20 year standard would be only 613 DDs (id.).

The Company explained that in order to meet this extended period of peak demand, the Company could dispatch its full portfolio of pipeline supply volumes (Exh. BG-1, at 66). Berkshire also explained that it would supplement those supplies with vaporized LNG from its Whately facility as well as LP dispatched from its production facilities (id.). The Company noted that the total daily pipeline volume available to Berkshire is approximately 38,000 Mcf with and additional 14,000 Mcf of LP vaporization capacity available through its LP production facilities and 3,600 Mcf of LNG vaporization capacity available at the Whately facility (id.). Berkshire stated that its ample propane storage and production facilities together with the contractual rights with Pittsfield Generating, have provided adequate cold-snap volumes for its firm customers to date (id. at 66-67). Berkshire also explained that the recent addition of the LNG storage and vaporization facility has addressed the reliability concerns for the Greenfield Division in a least-cost manner (Exh. DTE 1-108; Exh. DTE 1-120).

b. Analysis and Findings

The Department finds that Berkshire has employed an appropriate cold-snap standard for a company of its size and resources. Based on Berkshire's analysis, the Department finds that the Company has demonstrated that it has adequate supplies, particularly with the inclusion of the proposed LNG facility in the second year of the forecast, to meet its firm sendout requirements during a prolonged cold-snap. Accordingly, the Department finds that Berkshire has established that its cold-snap supply plan is adequate to meet the Company's forecast sendout requirements throughout the forecast period.

4. Conclusions on the Adequacy of the Supply Plan

The Department has found that: (1) Berkshire's normal year and design year supply plans are adequate to meet the Company's forecasted sendout requirements throughout the forecast period; (2) the Company has demonstrated that it has adequate supplies to meet forecasted sendout requirements under design day conditions throughout the forecast period, and; (3) the Company has demonstrated that it has adequate supplies to meet its firm sendout requirements during a prolonged cold-snap. Based on these subsidiary findings, the Department finds that Berkshire has established that it has identified adequate resources to meet its firm sendout requirements throughout the forecast period.

D. Supply Planning Process

1. Standard of Review

The Department has determined that a supply planning process is critical in enabling a utility company to formulate a resource plan that achieves an adequate, least-cost and low environmental impact supply for its customers. Berkshire Gas Company, D.P.U. 94-14, at 36 (1994); Colonial Gas Company, D.P.U. 93-13, at 70 (1995); 1992 Boston Gas Decision, at 223; Boston Gas Company, 19 DOMSC 332, at 388 (1990) ("1990 Boston Gas Decision"). The Department has noted that an appropriate supply planning process provides a gas company with an organized method of analyzing options, making decisions, and reevaluating decisions in light of changed circumstances. D.P.U. 94-14, at 36; D.P.U. 93-13, at 70; 1992 Boston Gas Decision, at 223; 1990 Boston Gas Decision, at 388. For the department to determine that a gas company's supply planning process is appropriate, the process must be fully documented. D.P.U. 93-13, at 70; 1992 Boston Gas Decision at 223.

The Department's review of a gas company's process for identifying and evaluating resources focuses on whether the company: (1) has a process for compiling a comprehensive array of resource options -- including pipeline supplies, supplemental supplies, DSM, and other resources; (2) has established appropriate criteria for screening and comparing resources within a particular supply category; (3) has a mechanism in place for comparing all resources, including DSM, on an equal basis, i.e., across resource categories, and; (4) has a process that as a whole enables the company to achieve an adequate, least-cost, and low environmental impact supply plan. Fitchburg Gas and Electric Light Company, D.P.U. 94-140, at 37 (1996); Colonial Gas Company, D.P.U. 93-13, at 70 (1995); 1992 Boston Gas Decision at 224; 1990 Boston Gas Decision at 54-55.

The Department reviews a gas company's five-year supply plan to determine whether it minimizes cost, subject to trade-offs with adequacy and environmental impact. Fitchburg Gas and Electric Light Company, D.P.U. 94-140, at 37 (1996); D.P.U. 93-13, at 88; 1992 Boston Gas Decision, at 236; 1987 Boston Gas Decision, at 214. A gas company must establish that the application of its supply planning process, including adequate consideration of DSM and consideration of all resource options on an equal basis, has resulted in the addition of resource options that contribute to a least-cost supply plan. D.P.U. 94-140, at 37; D.P.U. 93-13, at 83; 1992 Boston Gas Decision at 233; Berkshire Gas Company, 14 DOMSC 107, at 115 (1986). As part of this review, the Department requires gas companies to show, at a minimum, that they have completed comprehensive cost studies comparing the costs of a reasonable range of practical supply alternatives prior to selection of major new resources for their supply plans.

D.P.U. 94-140, at 37; D.P.U. 93-13, at 89; 1992 Boston Gas Decision at 236; 1986 Gas Generic Order, at 100-102.

2. Identification and Evaluation of Resource Options

a. Supply-Side Resources

Berkshire stated that the Company maintains the objective of providing a reliable and least-cost service with a minimum environmental impact under normal and design conditions in designing its resource portfolio, and that the Company bases the design of its resource portfolio on the Company's forecast of firm sendout under these conditions (Exh. BG-1, at 41). The Company stated that it employs the Gas Supply Dispatch Optimization Model to evaluate the particular mix of resources that should be included in the least-cost analysis (Exh. BG-1, at 41; Exh. D.T.E. 1-128).

The Company explained that it uses firm third party supply from South Texas and Louisiana, and Canadian supply from Niagara Falls, New York, and firm transportation on TGP's system to meet its base load requirements (id.). To meet its seasonal load requirements, the Company uses storage gas located in New York, Pennsylvania and West Virginia with additional firm transportation on the TGP system from those locations to Berkshire's meter stations (id.). The Company stated that it serves peaking loads with a combination of both LNG back-haul deliveries on Tennessee as well as LNG liquid vaporized at Berkshire's facility in Whately, Massachusetts (id.). In addition, the Company meets its peak load requirements by using peaking resources located within its service territory, including a contract with a co-generator, local propane production at its five peak shaving facilities, and its Load Management Rate utilized in its Greenfield division (id. at 41-42).

The Company stated that another important objective in designing its overall resource plan is to ensure a reasonable diversification of supply resources, as well as the maintenance and operation of a sound distribution system, which takes into account future demand growth on its system (id. at 43). The Company indicated that it continually monitors and evaluates its resource plan on a daily, weekly, and monthly basis within the context of its “Least-cost Supply Strategy”, so that the Company can release those resources it no longer needs (id. at 42). The Company explained that the strategy here is to minimize short-term costs while maintaining long-term supply security and economies (id.).

Berkshire highlighted a number of changes in the market and in the regulatory environment that have affected the Company’s resource planning process (id. at 43-54). These changes include: (1) gas unbundling and customer choice in Massachusetts; (2) portfolio optimization opportunities with the Energy East Companies; (3) pipeline and regional supply project changes; and (4) potential reverse migration of transportation customers to sales (id.). The Company noted that gas unbundling and customer choice in Massachusetts have given all of its customers the opportunity to choose the supplier of their natural gas commodity as of November 1, 2000, and this has affected its resource planning process in significant ways (Exh. BG-1, at 43). In particular, Berkshire has to make assumptions concerning customer migration to firm transportation when designing its resource portfolio (id.).

Regarding the portfolio optimization opportunities with the Energy East Companies, the Company stated that as a member of the Energy East/BP Energy Alliance, its integrated resource planning has been substantially enhanced because it now has access to a large pool of assets over a large and varied geographical area that it would not have access to as a

stand-alone Company (Exh. D.T.E. 1-61). The Company explained that having access to such a large pool of assets is of critical importance during a time of potential supply disruption (id.).

Berkshire stated that nine new pipeline and regional supply project changes will be developed during the forecast period (Exh. BG-1, at 49-52; Exh. D.T.E. 1-66). The Company noted that since many of these projects will have a direct impact on Berkshire's customers, and all of them "will help stabilize, and, hopefully, reduce gas prices for customers in the long term", it will continue to monitor the progress of these projects in terms of facility development (Exh. BG-1, at 52). On the potential reverse migration from transportation to sales, Berkshire stated that it is currently experiencing inquiries from a significant number of firm transportation customers who want to revert back to firm sales service (id.). The Company explained that the probable reason for this is the lower natural gas commodity prices, compared to natural gas prices in the winter of 2000/2001, which have rendered longer-term fixed price contracts offered by marketers less attractive to customers (id.). The Company stated that given the current mandatory capacity assignment regime, it does not anticipate any problems serving customers who switch to or from default sales service and transportation during the forecast period (id.). However, should "current capacity-exempt transportation customers request to switch back to the Company's default service, the Company would not have sufficient capacity or supply in its current portfolio to serve this additional load." (id.).

Berkshire stated that the Company adopts a three-step process when designing its resource portfolio (Exh. BG-1, at 53). These steps include: (1) identification of the resources the Company needs on a daily, seasonal and annual basis as well as during a design day, a cold-snap, or a design year scenario; (2) a comparison of the resources that are available to

meet all of the Company's requirements; and (3) a selection of the resources to be included in the portfolio based on both price and non-price factors, including price, length of contract and flexibility (id.). The Company stated that it meets its daily and seasonal resource requirements with a combination of long-haul and short-haul transportation capacity on Tennessee and corresponding gas supply volumes to be delivered using this capacity (id.). However, during peak periods, the Company supplements these resources with a combination of LP, and LNG, and other supplemental resources to serve its firm customers (id.).

The Company stated that it designed its current resource portfolio taking into account the changes that have occurred in the market and in the regulatory environment since the approval of its last forecast and supply plan in Berkshire Gas Company, D.T.E. 98-99 (1999); (id.). Berkshire stated that the changes in the market and in the regulatory environment have necessitated several contract changes since 1999 (Exh. BG-1, at 54). For example, the significant customer migration from sales to transportation that has occurred on the Company's system since 1999 necessitated an extensive negotiation with Tennessee in the renewal of its capacity contracts so that the Company could save customers money on demand charges as well secure more flexible contract terms (id.). The Company stated that it terminated a storage contract that it no longer needed due to migration on its system, as well as a long-term gas supply contract which included demand charges and replaced it with a short-term gas supply contract with minimal demand charges (Exh. BG-1, at 54). Berkshire stated that, in 2000, the Company added a new LNG facility in Whately to serve as a reliable source of peaking supply (id.). Finally, in compliance with the Department's directive on contract renewal, the Company

sought input from marketers before reaching a decision on which contracts it should renew (Exh. BG-1, at 55-64, citing Gas Unbundling D.T.E. 98-32-B).

b. Conservation and Load Management

The Company stated that its ongoing DSM programs continue to be an important resource for the Company and its customers (Exh. BG-1, at 42). Berkshire stated that with regard to load management, the Company encourages customers to reduce gas usage during the peak heating season from December through February (Exhs. BG-1, at 82; D.T.E. 1-121). The Company explained that it maintains a Load Management Rate for customers who agree to voluntarily reduce their gas usage to a predetermined level for up to 15 days during the peak heating season (Exh. BG-1, at 82). This rate is available to all non-residential customers with alternate fuel capabilities and who agree to reduce their gas usage by at least 500 Therms per day (id.). Berkshire stated that by offering a Load Management Program, the Company has been able “to serve its customers in the Greenfield division reliably since February 1990, deferring the need to add permanent facilities until very recently” (id.). The Company stated it will continue to offer the Load Management Program during the forecast period, making the service available to all eligible customers (id.).

c. Scenario Analysis and Contingency Planning

Berkshire stated that as part of its supply planning process the Company analyzed its resource plan under different scenarios of sendout to ensure that the Company could provide reliable, least-cost service to its customers (Exh. BG-1, at 67). The Company noted that given the stagnant economic growth in its service territory, which it expects to continue in the

foreseeable future, it concluded that a lower sendout scenario was the most plausible during the forecast period (id.).

The Company stated that in addition to the state of the economy in its service territory, it considered the impact that customer migration to firm transportation, projected to increase from 22 percent in October 2001 to approximately 29 percent by October 2006, would have on its resources, as part of the scenario analysis (id.). Berkshire noted that the outcome of the Department's review of the gas unbundling initiative in November 1993 is likely to affect the level of customer migration on its distribution system, with more customers likely to migrate to firm transportation (id.). Hence, there is a need for the Company to continue to hold supply, transportation and storage contracts that provide a great deal of flexibility without sacrificing reliability (Exh. BG-1, at 68).

Berkshire explained that because of the current mandatory capacity release program which provides migrating customers with the necessary capacity rights, its sendout requirements and pipeline capacity will continue to decline in proportion to the number of migrating customers during the forecast period (id.). The Company expects that this pattern will continue (id.). In conclusion, Berkshire stated that it designed its resource portfolio with sufficient flexibility so that it can continue to provide reliable and least-cost service to customers under different scenarios of customer migration and economic growth, and has taken into account the security and other concerns that might prevent the timely delivery of LNG to its facilities (Exhs. BG-1, at 68; D.T.E. 1-99; Tr. at 57).

d. Distribution Planning

Berkshire stated that its integrated resource planning process reflects the requirements of diversification of supply resources as well as the maintenance and operation of an adequate and reliable distribution system (Exh. BG-1, at 69). Berkshire explained that the Company operates three non-continuous distribution systems within its service territory in the North Adams division, the Pittsfield division, and the Greenfield division (Exh. D.T.E. 1-65). The estimated peak day sendout on the North Adams system for 2002/2003 design day is 11,292 Mcf; on the Pittsfield system is 29,037 Mcf; and on the Greenfield system is 13,443 Mcf (id.). In addition, the Company operates a propane/air plant at its North Adams sales meter station with a maximum daily delivery limit of 4,800 Mcf; two propane/air plants in the Pittsfield division - one in Pittsfield with a maximum daily delivery limit of 5,500 Mcf, and the other in Stockbridge with a maximum daily delivery limit of 1,400 Mcf; an LNG plant in Whately with a maximum daily delivery limit of 3,000 Mcf; and a backfeed off the Pittsfield Generating feedline which allows Berkshire to take up 7,500 Dths daily of peaking supply (id.).

The Company stated that distribution capacity has long been a concern in the Greenfield division, but the Company has recently addressed this problem by installing the Whately LNG facility as a peaking resource (Exh. BG-1 at 69). However, with more customers migrating to transportation service, the concern over distribution capacity has become an important issue for Berkshire's entire distribution system (id.). The Company stated that it analyzes and updates its existing distribution system models on a routine basis, and, based on the analysis, the Company does not anticipate any problem areas for the Pittsfield and North Adams divisions during the forecast period (Exh. D.T.E. 1-65). However, the Company will need to upgrade system

pressures on two of the eleven different distribution networks in the Greenfield division within the next two to three years (id.). The Turner Falls system will be upgraded from 40 Psig to 60 Psig and the Amherst system will be upgraded from 35 Psig to 60 Psig (id.).

e. Summary of Supply-Side Resources and Facilities

The supply-side resources that are available to meet the Company's firm sendout requirements during the forecast period are summarized in Table 1 below (Exh. BG-1, at 70-82). The resources include five firm transportation contracts, two firm storage contracts, four gas supply contracts with terms in excess of one year, two peaking supplies, and three supplemental resources (id.).

3. Conclusions on the Supply Planning Process

The Department finds that Berkshire evaluated its resource options based on price and non-price factors, including pricing parameters, length of contract, operating conditions, diversity of supply, and other terms and conditions, and that the Company arrived at a final resource portfolio that includes a reasonable mix of short-term and long-term resources, peaking and supplemental resources, as well as demand-side resources.

The Department notes that the Gas Supply Dispatch Optimization Model used by the Company to evaluate and compare the mix of resources that it will require to meet the daily projected sendouts on a least-cost basis is widely used in the industry, and, therefore, appropriate in this case. The Department further notes that Berkshire complied with Department directive in seeking input from marketers before reaching a decision on which pipeline capacity contracts it should renew.

Table 1: Berkshire Gas Company's Supply-Side Resources During the Forecast Period

Firm Transportation Contracts	Maximum Daily Quantity (MMBtu)	Total Annual Contract Quantity (MMBtu)	Type of contract
TGP Contract No. 8603	18,350	6,697,750	Long-haul/Short-haul
TGP Contract No. 2063/2064	1,057	385,805	365 days contract
TGP Contract No. 779	7,222	2,636,030	365 days contract
TGP Contract No. 10776	3,728	1,360,720	365 days contract
TGP Contract No. 584	1,305	476,325	365 days contract
Total	31,662	11,556,630	-----
Firm Storage Contracts	Maximum Daily Withdrawal Quantity (MMBtu)	Maximum Daily Injection Quantity (MMBtu)	Assigned Storage Capacity (MMBtu)
Tennessee FS-MA Contract No. 522	14,549	6,929	96,945
Dominion Transmission Inc., Contract No 300077	1,308	799	12,642
Total	15,857	7,728	109,587
Gas Supplies	Maximum Daily Quantity (MMBtu)	Total Annual Contract Quantity (MMBtu)	Type of Supply
Aquila/Dynegy I/Dynegy II contracts	10,553	3,851,845	Domestic (71.5 percent long-haul)
Bounday Gas	1,057	385,505	Canadian (60 percent annual take requirement)
DOMAC LNG	2,000	302,000	Domestic
Pittsfield Generating (formerly Altresco)	7,500	315,000	Domestic
Total	21,110	4,854,350	-----
Berkshire's Supplemental Resources	Maximum Daily Quantity (MMBtu)	Total Annual Contract Quantity	Storage Capacity (MMBtu)
Propane Facilities	13,800	-----	77,064
Portable LNG Vaporizer	1,800	-----	0
Whately LNG Facility	3,600	-----	10,032
Total	19,200	-----	87,096

Source: Exh. BG-1 at 70-82.

With regard to Berkshire's scenario analysis and contingency planning, the Department finds that the Company's assumptions regarding customer migration, economic growth in its service territory, and demand growth on its system during the forecast period are reasonable. The Department finds that the Company built sufficient flexibility into its resource portfolio to meet any contingencies, including any disruption in the supply of LNG to its facilities for security or other reasons. Furthermore, Berkshire's affiliation with the Energy East Companies and the Company's participation in the Energy East/BP Energy Alliance will provide it with access to resources which hitherto it could not have (Exh. D.T.E. 1-61). The Department notes that Berkshire is in the process of developing an Emergency Load Shedding Plan as part of its contingency planning (Exh. D.T.E. 1-121; RR-DTE-3; Tr. at 58). The Department directs the Company to finalize the plan within one month of the issuance of this Order, and to submit a copy to the Department for review.

With regard to distribution planning, the Department finds that Berkshire's distribution system is reasonably adequate to serve customers' needs during the forecast period. The Department notes that Berkshire is taking steps to upgrade its distribution system in the Greenfield division within the next two to three years, and directs the Company to update the Department on its distribution system when the upgrades are completed.

Finally, the Department notes that Berkshire has not had any major problems serving customers' needs during peak or non-peak periods in the past five years, nor has the Company interrupted gas service to its firm sales customers during the past five years with the exception of rare system improvement occasions. The Department finds that the process Berkshire followed in developing its resource portfolio is reasonable and consistent with earlier

Department decisions. See Berkshire Gas Company, D.T.E. 98-99 (1999); Berkshire Gas Company, D.P.U. 93-187 (1994); Berkshire Gas Company, D.P.U. 92-155 (1992).

In conclusion, the Department finds that Berkshire: (1) formulated an appropriate process for identifying a comprehensive array of supply options and has developed appropriate criteria for screening and comparing supply resources; (2) formulated an appropriate process for identifying a comprehensive array of demand-side management (“DSM”) programs, and has developed appropriate criteria for screening and comparing DSM resources, (3) incorporated both supply-side and demand-side options in its resource mix; (4) possessed a distribution system that is reasonably adequate to meet customers’ needs during the forecast period; and (5) developed a reasonable contingency plan to provide a reliable service to customers during the forecast period. Accordingly, the Department finds that the Company has an appropriate supply planning process, and that the Company’s supply plan is reviewable, appropriate, and reliable.

IV. ORDER

Accordingly, after due notice, hearing and consideration, it is

ORDERED: That Berkshire Gas Company’s petition for approval of its long-range forecast and supply plan be and hereby is APPROVED; and it is

FURTHER ORDERED: That Berkshire Gas Company comply with all of the directives contained herein; and it is

FURTHER ORDERED: That Berkshire Gas Company shall file its next long-range forecast and supply plan with the Department by January 31, 2005.

By Order of the Department,

Paul B. Vasington, Chairman

James Connelly, Commissioner

W. Robert Keating, Commissioner

Eugene J. Sullivan, Jr., Commissioner

Deirdre K. Manning, Commissioner

Appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part.

Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such time as the Commission may allow upon request filed prior to the expiration of twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. (Sec. 5, Chapter 25, G.L. Ter. Ed., as most recently amended by Chapter 485 of the Acts of 1971).